unbundled network elements at a technically feasible point must demonstrate that provision of such elements would be consistent with 47 U.S.C. ' 251(d)(2). An incumbent local exchange carrier's wholesale and retail services shall not be considered network elements.

(2) The rates, terms, and conditions for unbundled network elements shall be just, reasonable, and non-discriminatory. Where unbundled network elements are provided pursuant to an arbitrated agreement, rates for such elements shall be presumed to satisfy this requirement where the State public utility commission with jurisdiction over the agreement finds they are based on cost, include a reasonable profit, and are non-discriminatory. States may not utilize rate-of-return or other rate-based mechanisms to ascertain cost, but may utilize any other method that permits the incumbent carrier to recover the costs (including a reasonable profit) of providing the unbundled network elements.

(3) An incumbent local exchange carrier shall allow a requesting telecommunications carrier to combine such elements in order to provide a telecommunications service, provided that the requesting carrier may not combine network elements solely provided by the incumbent local exchange carrier in order to create the equivalent of a telecommunications service that the incumbent local exchange carrier makes available for resale.

(c) Resale. (1) Upon request, an incumbent local exchange carrier shall offer for resale at wholesale rates any telecommunications service that the carrier provides at retail to subscribers who are not telecommunications carriers. Where resale is provided pursuant to an arbitrated agreement, the State public utility commission with jurisdiction over the agreement shall determine wholesale rates on the basis of retail rates charged to subscribers for the requested telecommunications service, excluding the portion thereof attributable to any marketing, billing, collection, and other costs that will be avoided by the local exchange carrier, but including any reasonable additional costs caused by making the service available for resale at wholesale rates.

(2) An incumbent local exchange carrier shall not prohibit, and shall not impose unreasonable or discriminatory conditions or limitations on, the resale of any telecommunications service that the carrier

provides at retail to subscribers who are not telecommunications carriers. It shall not be unreasonable for a carrier to restrict resale to the same class of service or, with respect to intrastate services, to impose such other limitations as may be permitted or required by the State public utility commission with jurisdiction over such services.

(d) Notice of changes. An incumbent local exchange carrier shall provide reasonable public notice of changes in the information necessary for the transmission and routing of service using its facilities or network, as well as of any other changes that would affect the interoperability of those facilities and networks, in accordance with sections 64.702(d)(2) and 68.110 of the Rules and the disclosure requirements set forth in *Amendment of Section 64.702 of the Commission's Rules and Regulations, Phase II*, 2 FCC Rcd 3072, 3087-93 (1987).

(e) Collocation. (1) An incumbent local exchange carrier shall provide physical collocation at its premises of equipment necessary for interconnection or access to unbundled network elements, at just, reasonable, and nondiscriminatory rates, terms, and conditions. Where collocation is provided pursuant to an arbitrated agreement, rates shall be presumed to satisfy this requirement where the State public utility commission with jurisdiction over the agreement finds they are based on cost, include a reasonable profit, and are non-discriminatory. States may not utilize rate-of-return or other rate-based mechanisms to ascertain cost, but may utilize any other method that permits the incumbent carrier to recover the costs (including a reasonable profit) of providing the collocation.

(2) Notwithstanding paragraph (1), an incumbent local exchange carrier may provide virtual collocation if it demonstrates to the relevant State commission that physical collocation is not practical for technical reasons or because of space limitations.

Results of GTE California Resale
Avoided Cost Study
Filed in Compliance with ALJ's March 25, 1996, Ruling in D.96-003-020.

	Retail Rate	Avoided Costs[1]	Percent Avoided[2]
Basic Residential Service	$17.25	$0.78	4.5%
Basic Business Service	$19.22	$1.04	5.4%
Toll or Measured Local Service Usage			8.2%
Advanced			15.2%

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1 Avoided costs are defined as the costs of providing a service on a retail basis less the costs of providing that service for resale. For residential and business services, the avoided costs were calculated on a per line per month basis, and are used directly to calculate a resale price.

2 For Usage (*e.g.*, toll, measured local) and Advanced (*e.g.*, digital, private line) services, the Percent of Avoided costs shown are applied to the retail rate for a service to determine the dollar amount of avoided costs for that service.

Affidavit of Michael J. Doane, J. Gregory Sidak, and Daniel F. Spulber

We are filing this affidavit on behalf of GTE Service Corporation. Descriptions of our professional qualifications appear in *An Empirical Analysis of Pricing Under Sections 251 and 252 of the Telecommunications Act of 1996* (hereafter *"Empirical Analysis"*), filed as Attachment 4 to GTE's Comments. We identify here the substantial extent to which the affidavit filed on behalf of AT&T Corp. by Professors William J. Baumol, Janusz A. Ordover, and Robert D. Willig (hereafter "the Affidavit") agrees with our *Empirical Analysis*. AT&T's economists endorse (1) the use of the efficient component-pricing rule (ECPR) for pricing mandatory network access and (2) the imposition of competitively neutral charges for the recovery of stranded costs. Nonetheless, the disagreements that do exist between the Affidavit and our *Empirical Analysis* have significant implications for economic welfare. Those disagreements demand the Commission's close scrutiny of the adverse ramifications of rejecting the ECPR for a rule that would price mandatory access to the network of an incumbent LEC (ILEC) at total service long run incremental cost (TSLRIC).

I. Baumol, Ordover, and Willig Reaffirm That the ECPR Is the Appropriate Method to Price Mandatory Network Access.

Through their articulation of the ECPR, Baumol and Willig have made a seminal contribution to economic theory. Scholars and jurists routinely call the ECPR the "Baumol-Willig Rule." It therefore could hardly be otherwise that Baumol, Ordover, and Willig "continue to believe that principles of ECPR are valid and serve a useful regulatory role."[1] We concur.

Baumol, Ordover, and Willig nonetheless believe that the ECPR cannot be mechanically applied to the ILEC's unbundled network elements. Again, we concur. The rule requires sophistication in its application, especially when a regulated rate structure requires the ILEC to set some prices below cost. The Commission's caricature of the ECPR, however, understandably causes Baumol, Ordover, and Willig to applaud the agency's tentative rejection of the ECPR "in a form *supposedly* advocated by us"[2] and to say politely that the Commission's rejection of the rule "is proper, although for reasons that differ somewhat from those articulated in the Notice."[3] In other words, Baumol, Ordover, and Willig evidently agree with us that the Commission's criticisms of the ECPR, *as the agency incorrectly describes the rule,* are misplaced.

Given that the Commission's reasons for rejecting the ECPR do not motivate Baumol, Ordover, and Willig to conclude that application of the rule would not serve the public interest in the present case, then by what rationale do they deviate from our *Empirical Analysis* and decline to apply here the same pricing rule that they advocated in railroading, in electric power, and in local telephony in New Zealand? *The Affidavit makes critical assumptions about the opportunity-cost component of the ECPR that are empirically unfounded in light of the evidence marshalled in our Empirical Analysis.* Our examination of actual cost and price data from GTE Florida Inc. confirmed (1) that there are significant joint and common costs among network elements, such that pricing the ILEC's wholesale and unbundled services at or near long-run incremental costs would fail to meet the statutory requirement that rates be just and reasonable and, in the case of unbundled elements, would exclude the reasonable profit allowed by statute; and (2) that there will be stranded costs *even if* the prices of wholesale and unbundled services are set according to the ECPR. Had Baumol, Ordover, and Willig seen our empirical evidence when assessing the suitability of the ECPR to the present task, one could have expected them to follow their analysis to its logical conclusion: Pricing mandatory access to the ILEC's network at TSLRIC fails to produce efficient incentives for entry and fails to produce just compensation for the government-ordered physical invasion of the LEC's property by its competitor.

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1 Affidavit at 8 ¶ 20.

2 *Id.* (emphasis added).

3 *Id.*

A. The Affidavit Equates Stand-alone Costs to Incremental Costs, and Thus It Assumes That None of the ILEC's Costs Are Joint and Common.

A supplier will not voluntarily invest in a transaction unless he expects the returns from the transaction to cover all its economic costs, including a competitive return to invested capital. That principle is summarized in Armen Alchian's classic definition of cost: "In economics, the cost of an event is the highest-valued opportunity necessarily forsaken."[4] The supplier's costs of investing in the transaction include the highest net benefit of all opportunities forgone, known as *opportunity cost*. The Baumol-Willig Rule extends that logic to the mandatory sale of network access. The price of a network input should reflect all direct incremental costs and all opportunity costs incurred by the supplier. Baumol expresses the rule as follows: "*optimal input price = the input's direct per unit incremental cost + the opportunity cost to the input supplier of the sale of a unit of input*."[5] In the absence of government compulsion, no firm would sell an input to its competitor for less than the price implied by the Baumol-Willig Rule.

The ECPR, in other words, replicates the price that would result from voluntary exchange. As a result, the Baumol-Willig Rule does more than establish the proper incentives for efficient entry into the regulated market. It also ensures that the price of government-mandated network access is sufficient to avoid a taking of property.[6] The Affidavit, however, ensures neither result. It instead asserts, without any factual evidence, that an ILEC would bear no opportunity cost by being required to sell unbundled network elements at TSLRIC. In other words, the Affidavit asserts that the Baumol-Willig Rule, adjusted in this situation to reflect the supposed absence of opportunity costs of any significance, yields the following formula: *Efficient price of aggregate network element = TSLRIC of aggregate network element + 0.*

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4 Armen A. Alchian, *Cost*, *in* 3 International Encyclopedia of the Social Sciences 404, 404 (David L. Sills ed., MacMillan Co. & Free Press 1968).

5 William J. Baumol & J. Gregory Sidak, Toward Competition in Local Telephony 94 (MIT Press & AEI Press 1994).

6 *See* J. Gregory Sidak & Daniel F. Spulber, *Deregulatory Takings and the Regulatory Contract*, 71 N.Y.U. L. Rev. (forthcoming 1996).

Indeed, that formula must be the correct interpretation of their position, because the term "opportunity costs" does not appear in their affidavit despite its frequent use in their previous writings and testimony. Baumol, Ordover, and Willig are able to conclude that the efficient price of unbundled elements is TSLRIC *only* because they assume that the ILEC has "minimal or nonexistent" joint and common costs.[7]

If that assumption were true, then several remarkable conditions would obtain: (1) the local exchange would have no economies of scope; (2) the local exchange market could be served just as efficiently by single-product firms, consistent with the classical definition of a perfectly competitive market, and (3) such technological conditions would render the 1996 Act's entire access-pricing regime unnecessary, as the services of the ILECs' networks would be easily supplanted by competitive small-scale, single-product firms. If such a state of affairs were likely to exist, it would be unnecessary for Baumol to write:

> [E]ven if every one of a firm's services is sold at a price equal to its average-incremental cost, the firm's total revenues may not cover its total costs. Consequently, it is normal and not anticompetitive for a firm to price some or all of its products to provide not only the required profit component of incremental cost, but also some contribution toward recovery of common fixed costs that do not enter the incremental costs of the individual products.[8]

The opportunity-cost component of the Baumol-Willig Rule seeks to generate for the firm the contribution to margin essential to its solvency

B. Although the Affidavit Does Not Recognize Joint and Common Costs Between Aggregative Categories, It Does Correctly Recognize the Presence of Such Costs Between Individual Network Elements.

The Affidavit (at 13) asserts without empirical support that, with regard to *aggregative* categories of network elements (loop, switching transport, signaling), "[e]conomies of scope, or cost subadditivities, among these categories are likely to be minimal or nonexistent." But even if empirically supported, that statement would not mean that there would not be economies of scale and scope within those aggregative categories (again associated with shared costs or joint and common costs). Thus, the ILEC is not asked to

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7 Affidavit at 13 ¶ 35.

price *all* loops taken together or *all* switching taken together as a bundle, but rather to offer significantly finer disaggregation of its services At this point, the Affidavit (at 5, n.1) recognizes: "The competitive price for any such subcomponent must be between the subcomponent's unit long run incremental cost and SAC [stand-alone cost]." Thus, their own analysis is inconsistent with the TSLRIC pricing approach and supports the recovery of joint and common costs.

The Affidavit (at 14) further argues that the prices for unbundled network services should be priced above their incremental costs to recover joint and common costs, which within their framework equals "the difference between the TSLRIC of an aggregate of outputs, and the sum of the TSLRICs of each subset of those outputs." According to the Affidavit (*id.*), those costs "should be assigned to individual network elements on an efficient and competitively neutral basis." We agree that those costs should be recovered through prices on unbundled network services above their TSLRICs. We also agree that those costs should be recovered whether they are small or significantly large, in which case "the method of revenue recovery should be consistent with allocative and competitive efficiency."[9] That outcome could only be achieved by pricing above the incremental costs of the unbundled network services, according to the formula that Baumol and Willig have advocated elsewhere:

> *Efficient price of unbundled network element = TSLRIC of unbundled network element + opportunity cost.*

We concur with the Affidavit that such recovery should be bounded above by stand-alone costs, which would properly include any joint and common costs, and that "it should be no higher than the imputed price charged by the ILEC to itself in the context of a competitive offering."[10] How does AT&T propose to assign those joint and common costs to the unbundled network services? AT&T urges the Commission to adopt a

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8 Baumol & Sidak, Toward Competition in Local Telephony, *supra* note 5, at 102.
9 Affidavit at 14.
10 *Id.* at 14, n.7.

form of fully distributed cost (FDC) pricing known as the attributable cost method.[11] As Baumol and Willig have previously shown, however, the distinguishing feature of FDC pricing is that the allocation of common costs is done without reference to any economically meaningful criteria.[12] AT&T and its expert economists are in conflict with one another on this fundamental point.

C. The Affidavit's Assertion That ILECs Earn Monopoly Profits Lacks Factual Support.

Baumol, Ordover and Willig expresses concern that current rate structures include monopoly profits.[13] That assertion is made without empirical support and is inconsistent with the history of price regulation of ILECs, which has controlled their earnings either through traditional cost-of-service regulation or incentive regulation. Moreover any returns obtained by the LECs from achieving cost efficiencies under incentive regulation are an intended consequence of price caps and should not be eliminated retroactively. Those returns in any case are limited by sharing rules and other regulatory constraints. Finally, the assertion of monopoly profits is inconsistent with the ILECs' existing and continuing obligations to serve. The opportunity-cost component of the Baumol-Willig Rule will necessarily be positive, notes Baumol, "when a regulated firm has special-service obligations imposed upon it,"[14] as is the case with any ILEC. Again, Baumol writes: "These obligations are appropriately treated as sources of common fixed costs for the firm; the costs must be covered legitimately by the firm's prices and be taken into account in calculating its stand-alone-cost ceilings [for final-product prices]."[15]

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11 "[T]he Commission should establish a presumption that such costs will be assigned on a equiproportional basis relative to causally attributable costs. . . ." AT&T Comments at 63.

12 William J. Baumol, Michael F. Koehn & Robert D. Willig, *How Arbitrary is "Arbitrary"?--or, Toward the Deserved Demise of Full Cost Allocation*, 21 Pub. Util. Fortnightly, Sept. 3, 1987, at 16; *accord*, William J. Baumol & J. Gregory Sidak, Transmission Pricing and Stranded Costs in the Electric Power Industry 55-64 (AEI Press 1995).

13 Affidavit at 8 ¶ 23.

14 Baumol & Sidak, Toward Competition in Local Telephony, *supra* note 5, at 108.

15 *Id.* at 108-09.

II. Baumol, Ordover, and Willig Endorse Stranded Cost Recovery Through Competitively Neutral End-User Charges.

The Affidavit (at 21) correctly advocates keeping cross subsidies to a minimum: "A deliberate wedge between prices and TSLRIC is most likely to result from a decision to subsidize universal service and other regulatory goals." That is because pricing below incremental costs for some services requires obtaining subsidies elsewhere, encourages excess demand for those services, and harms the financial solvency of the incumbent, thus placing it at a disadvantage relative to entrants. Furthermore, obtaining those subsidies by adding overcharges to other services inefficiently reduces demand for those facilities and places the incumbent at a competitive disadvantage to entrants that can price flexibly, which leads to inefficient bypass of existing network facilities. Baumol, Ordover, and Willig concur with the conclusion of our *Empirical Analysis* that the rates of the ILECs should be rebalanced to eliminate cross subsidization.

The Affidavit correctly advocates competitive neutrality of funding and distribution mechanisms. That requires that regulatory obligations, price regulations, and unbundling requirements neither penalize nor reward incumbents or entrants. The Affidavit (at 21) correctly notes that deviations between prices and economic costs should not distort competition between the ILEC and its potential rivals: "To be competitively neutral, a regulatory wedge between prices and TSLRIC must never favor entrants over incumbents, or *vice versa*." We agree. As the Affidavit (at 21) elaborates:

> The reason is obvious: any such departures from competitive neutrality tend to channel business to inefficient suppliers. This inefficient allocation of business will raise costs, repress innovation and investments and--as usual when competition is diverted--needlessly burden consumers.

But as Baumol has emphasized elsewhere, economic logic implies that this principle be applied not only to specific subsidies (for example, universal service), but to *all* pertinent costs, including the cost of regulatory obligations--past, present, and future. The entry of competitors not burdened by such expenses raises the prospect that such costs will be stranded. Baumol states:

> Stranded costs are those costs that utilities are permitted to recover through their rates but whose recovery may be impeded by the advent of competition in the industry. Those costs represent expenditures incurred by a utility in the past in meeting its obligation to

> serve all customers within the areas in which it held an exclusive franchise, granted to it in the traditional regulatory regime.[16]

Baumol argues that such stranded costs should be recovered: "The cost of recoupment of stranded costs can be considered part of the common costs to which the price of inputs supplied by the utility to other firms can appropriately contribute or even cover completely."[17] If regulators "omit or limit recovery of portions of opportunity costs," he concludes, their "pricing policies will undermine economic efficiency."[18]

It bears emphasis that ECPR pricing is not fully compensatory.[19] That is, the rule adapts to competitive alternatives and therefore is not bound to the ILEC's historical costs. Thus, as Baumol, Ordover, and Willig advocate, regulators should consider rate rebalancing before imposing a system of prices for wholesale services and unbundled network elements. However, if regulators do not rebalance rates, then, to preserve the existing contribution in the incumbent's current rate structure, a system of end-users charges must accompany the pricing of wholesale services and unbundled elements.

The Affidavit accepts as an article of faith that the ILEC's TSLRIC exactly equals the stand-alone costs of potential entrants. In contrast, we regard that question as an empirical matter to be decided by market participants. The cost of meeting regulatory obligations that cannot be recovered in competitive markets are appropriately collected through competitively neutral charges that do not distort consumption and investment decisions. Those costs include universal service and joint and common costs that are not recovered in a competitive market. That is precisely the recommendation of Baumol, Ordover, and Willig when one follows their proposal for universal service funding to its logical economic conclusion.

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16 Baumol & Sidak, Transmission Pricing and Stranded Costs in the Electric Power Industry, *supra* note 12, at 98.

17 *Id.* at 147.

18 *Id.*

19 The presence of facilities-based entry, and the possibility that entrants may purchase services under existing retail rates that are substitutes for the unbundled network elements of the ILEC, reduce the likelihood that the incumbent will recover its total costs. That is because the incumbent's price will be constrained by the stand-alone cost of the best alternative.

* * *

I hereby swear, under penalty of perjury, that the foregoing is true and correct, to the best of my knowledge and belief.

J. Gregory Sidak

J. Gregory Sidak

Subscribed and sworn to before me this 29th day of May, 1996.

Grace G. Santosto Palmato

Notary Public

My Commission expires: My Comm[illegible] [illegible] 1997

* * *

I hereby swear, under penalty of perjury, that the foregoing is true and correct, to the best of my knowledge and belief.

Daniel F. Spulber

Daniel F. Spulber

Subscribed and sworn to before me this 29th day of May, 1996.

OFFICIAL SEAL
KIMBERLY J WO
NOTARY PUBLIC, STATE
MY COMMISSION EXP

Kimberly J. Wojack

Notary Public

My Commission expires: 12/12/99.

OFFICIAL SEAL
KIMBERLY J WOJACK
NOTARY PUBLIC, STATE OF ILLINOIS
MY COMMISSION EXPIRES: 12/12/99

*   *   *

I hereby swear, under penalty of perjury, that the foregoing is true and correct, to the best of my knowledge and belief.

Michael J. Doane

Michael J. Doane

Subscribed and sworn to before me this 24th day of May, 1996.

Nancy S. Jong

Notary Public

My Commission expires: December 26, 98.

NANCY S. JONG
Comm. #1048102
NOTARY PUBLIC · CALIFORNIA
City & County of San Francisco
Comm. Expires Dec. 26, 1998
THE GREAT SEAL OF THE STATE OF CALIFORNIA
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Certificate of Service

I, Ann D. Berkowitz, hereby certify that copies of the foregoing "Reply Comments" have been mailed by first class United States mail, postage prepaid, on May 30, 1996 to all parties of record.

Ann Berkowitz

Ann D. Berkowitz